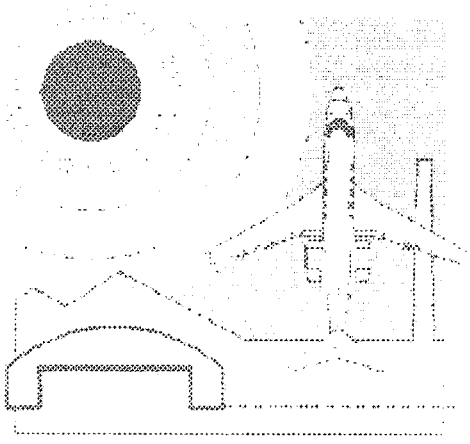
SECTION 2: INVENTORY OF EXISTING CONDITIONS



BISBEE-DOUGLAS INTERNATIONAL AIRPORT
Douglas / Cochise County, Arizona

AIRPORT MASTER PLAN - 1997

SECTION 2:
INVENTORY OF EXISTING CONDITIONS

INTRODUCTION: CONDITION OF AIRPORT FACILITIES

This section of the Master Plan will provide a baseline record of the general condition of the various airport facilities at the Bisbee-Douglas International Airport.

The condition of the facilities was determined by engineering and architectural investigations and surveys at BDI during October of 1996. Specific investigations were made to determine the condition of the airport's existing pavements, buildings, drainage, fencing, and utilities.

The investigations included research of available record plans and documents as well as field surveys. Field location of existing utilities and drainage facilities was severely hampered by the dense overgrowth of desert vegetation and weeds in the abandoned and little-used areas of the airport.

In the following narrative, each facility has been assigned a general condition rating of "Good", "Fair", or "Poor". A facility rated as "Good" may be assumed to be substantially adequate throughout the 20-year time frame of this study, assuming only normal maintenance. A rating of "Fair" means that the item will probably require major upgrade or replacement at some time during the planning period, but is at least serviceable at the present time. A rating of "Poor" indicates that the item is not adequate for its intended use at the present time.

AIRPORT PAVEMENT CONDITION

A visual engineering investigation of the airport's existing pavements was conducted by ATL, Inc. as a part of the scope of this study. Their recommendation is that all airside pavements be reconstructed, except for a portion of Runway 17-35.

ATL's report is included in the Appendix.

The pavement areas discussed below are illustrated in Figure 2-1, Pavement Condition Index Map at the end of this section.

As originally constructed, Douglas Airfield had seven operational runways, all over 7,000' in length and all of bituminous construction, as well as an extensive system of bituminous taxiways. Over the years, five of the original seven runways as well as most of the bituminous taxiways and apron areas have been abandoned.

The original seven runways included 17L-35R, 17R-35L, 8L-26R, 8R-26L, 3L-21R, 3R-21L, and 12-30. Most of these are still visible from the air although only Runways 17R-35L and 8L-26R are currently operational (now designated as 17-35 and 8-26).

Runways 17L-35R, 3R-21L, and 8R-26L, as well as many taxiways and a large portion of the bituminous apron, were abandoned in the early 1950's. Although still discernable, these areas have more-or-less returned to the desert. These long-abandoned facilities may be economical sources for granular fill materials. Existing aggregates may be salvageable for use in recycled base or subbase courses.

Runways 3L-21R and 12-30 and serving taxiways were closed in the late 1970's. The existing pavement is not useable for aircraft operations and the runways are marked with X's to indicate their closed status. These areas are also good sources for recycling materials and granular fill.

As observed in October of 1996, Runway 17-35 is in Fair to Poor condition. In 1992, a preservative seal coat was applied to the center 60' of this runway. The aggregate used in the seal coat is 0.5" nominal size. Local pilots have commented that the resulting surface friction characteristics of this aggregate causes extreme tire wear. Weeds and desert vegetation are thick in places along the runway shoulders, sometimes screening the runway lights.

Runway 8-26 was observed to be in Poor condition. The pavement is well beyond its useful life. Weeds and desert vegetation are encroaching upon the paved surface, sometimes extending across the entire pavement width.

All of the existing bituminous taxiways and apron areas are in Poor condition, exhibiting deformation, large cracks and potholes.

The 75' wide concrete apron is in Fair condition. Some panels will require replacement and all joints should be resealed, but most of the apron is usable at the present time.

All landside pavements, except the airport and prison access road, are in Poor condition. The access road is in Fair condition.

AIRPORT BUILDINGS CONDITION

The airport's main buildings were field inspected on October 8, 1996. This section of the report addresses existing conditions only. Recommendations and a detailed description of non-compliance concerns will follow.

The location of each of the airport buildings is shown on Figure 2-2, Building Area Key Map at the end of this section. Floor plan sketches for each of the buildings are illustrated in Figures 2-3 through 2-7, as referenced in the following narrative.

Building #1 (Terminal Building)

The airport Terminal Building (Building #1) consists of an approximate 8,850 square foot single story wood frame structure with an approximate age of 56 years. The structure was remodeled per plans dated 1949, and prepared by Lescher and Mahoney - Architects.

The exterior design consists of a flat roof with a mild slope, and a shallow metal fascia. Steel and stone veneered masonry columns exist at the front and rear lobby entrances. The exterior wall covering is of asbestos shingles. Abatement will be required for any future renovation, or remodeling.

A vacant coffee shop, public restrooms, and offices occupy the north portion of the building. The south portion is occupied by the airport's director, and the facilities staff. The central lobby consists of wood veneered columns and vinyl tiled floors with built-in seating. A snack bar is available for passengers and customers.

The structure is elevated with step and ramp access areas.

Thorough investigation and testing of the various structural, electrical, plumbing, mechanical and HVAC systems as well as a hazardous materials investigation is recommended prior to any remodeling or renovations to this building.

The Terminal Building (Building #1) is illustrated in Figure 2-3 at the end of this section.

In general, the Terminal Building was found to be in Fair condition. The vacant coffee shop is in Poor condition. The lobby and airport manager's office are in Good condition. The balance of the building's interior space is in Fair condition. The major detriment is the existence of asbestos in both exterior siding and interior ceilings.

Building #2 (Former Cannery / Warehouse)

Building #2 consists of several additions to an approximate 14,000 square foot wood framed dual barrel roof structure of approximate age of 50 years. The additions encompass the original building at all four sides, and consist of various structural materials. The total area of the building is approximately 41,000 square feet.

A metal canopy exists on the north side which is opened on three sides, and abuts a second steel framed addition. A third steel frame addition exists on the south side of the original building. An additional wood framed workshop area and a masonry addition also exist on the east side.

Water damage was observed at the structural roof members on the original wood frame structure, with resultant deflection. A structural investigation, including deflection testing of the wood trusses, to determine the integrity of the members is recommended. The airport manager indicated that a new roof was installed two and one half years ago (1993). County staff has indicated that this consisted of the application of a 3" layer of foam. No repairs were made to the roof structure.

The interior improvements include a two story office, restrooms, and a cafeteria facility. A second single story restroom also exists. The concrete floor has been partially demolished, and lightweight aggregate and gypsum concrete pieces are stacked on site to be removed. No fire protection system was observed. The electrical service is outdated and will require replacement.

The structure as it exists does not meet modern building codes with respect to its size and related assemblies. The costs of updating the current assemblies to comply with modern building codes, with the implementation of area separation walls, fire protection systems, and the corrections resulting from structural investigations should be

considered pending a thorough structural, electrical, mechanical, and plumbing investigation.

The Former Cannery/Warehouse (Building #2) is illustrated in Figure 2-4 at the end of this section.

Building #2 was found to be in generally Poor condition, with the probability of prohibitively expensive structural repairs and remodeling, and replacement of electrical systems being the major detriments to use at this time. The building is presently occupied by owls, and infested with bats and mice.

Hangars #1, #2, #3

Hangars #1, #2 and #3 consist of three nearly identical structures constructed from plans dated 1939, as prepared by the U.S. Engineers Office. The approximate size of each hangar is 12,000 square feet. The hangars were identically constructed with exception of various modifications which were made over time. Construction consists of a combination of wood framing and steel framing members with corrugated metal exterior siding. The roof structure consists of steel barrel trusses with wood sheathing. All three buildings show signs of roofing moisture damage.

A wood framed "office" portion exists at the rear of each building where restrooms and a boiler room once existed.

Hangar #1 is currently occupied under a pending lease, housing six aircraft. The current tenant has installed new drywall or paneling in the original interior "office" area rooms at the rear of the hangar. New recessed lighting and drop ceilings with acoustical tile have also been installed in this area. A new three-phase 200A electrical service has been installed and the interior electrical system has been improved. The current tenant has also constructed 370 square feet of new office space along the east wall of this hangar.

Hangar #2 has a two story office addition, and is not currently occupied. The roof of this hangar leaks badly, and the floor drain is clogged causing the hangar to flood during heavy rains.

Hangar #3 is presently not occupied, and has very few improvements. The roof of Hangar #3 is in the most disrepair with fiber board falling from the ceiling. However, this roof does not currently leak as badly as Hangar #2.

A thorough investigation with specific testing of the structural, electrical, and plumbing systems, is recommended for these three structures prior to any remodeling or renovation.

Hangars #1, #2 and #3 are illustrated in Figure 2-5, at the end of this section.

The three steel hangars are generally in Fair condition. Major detriments affecting current use are birds and rodents living in the structures, as well as poorly operating hangar doors, leaking roofs, and missing and broken window panes.

Each of these hangars will accommodate 5 or 6 light aircraft, assuming no wing overlap.

Hangar #4

This building consists of a single story wood framed structure with double wood barrel vault trusses in partial heavy timber post and beam construction. The exterior walls consist of poured in place concrete for the first 5'-4", and wood frame construction for the balance of the exterior walls. The exterior siding consists of asbestos shingles. Abatement will be required prior to any renovations or remodeling. The approximate building size is 26,000 square feet.

The interior area at the center 18 feet consists of a single-story wood framed storage and office area. The electrical system as observed is outdated. The structural members appear to be in good condition. The building is currently being used as leased hanger space for small aircraft.

The structure as it exists does not meet modern building codes with respect to its size and related assemblies. The costs of updating the current assemblies to comply with modern building codes with the implementation of required rated assemblies, and fire protection should be considered.

Thorough investigation and testing of the various structural, electrical, plumbing, mechanical and HVAC systems as well as a hazardous materials investigation is recommended prior to any major remodeling or renovations to this building.

Hangar #4 is illustrated in Figure 2-6, at the end of this section.

This building was found to be in Good condition. Major detriments are the existence of asbestos in the exterior siding, and bats, birds and mice residing in the building. There is an existing wind cone on the roof of Hangar #4 which is in Good condition.

Hangar #4 will accommodate 8 light aircraft, allowing easy access, no aircraft "sorting", and assuming no wing overlap. As many as 16 aircraft could be accommodated for long term storage.

Building #3 (Unoccupied)

Building #3 is a wood-frame constructed, gable-roofed structure which is currently not occupied. It was constructed in the 1940's along with the other buildings and hangars. The original use of the building is not clear. At some point in its history, it was gutted and remodeled, as is evidenced by the current sheet rock ceiling with a sprayed acoustic finish.

The interior of this building has been partitioned into several small work areas, similar to office partitioning. The floor is bare concrete.

The existing structure does not meet modern building codes. No obvious hazardous materials were observed.

Evidence of water damage caused by a leaking roof was observed. There is a large hole at the low point of a sagging ceiling. The floor slab has 1/2" to 3/4" cracking in evidence, running the length of the building, which has been repaired by filling in the past.

Building #3 is in generally Poor condition. The major detriments to use at this time are the condition of the roof and floor slab. Roof leakage will cause future damage to the remainder of the structure if not repaired.

This building is illustrated in Figure 2-7, at the end of this section.

Airport Utilities and Drainage

A field investigation and record drawing research for the airport's utilities and drainage features was conducted as a part of this study.

Drainage features are shown on Figure 2-8, Airport Drainage Map, and existing airport utilities are shown on Figure 2-9, Airport

Electrical & Gas Inventory, and Figure 2-10, Airport Water & Sewer Systems, at the end of this section.

Drainage

The BDI airport is located in an area of gently sloping desert terrain with a natural gradient to the south of about 1%.

Storm waters entering the BDI site from the north are diverted to the east and west by a dike and interceptor ditch.

Onsite drainage is handled by a system of surface swales, ditches and subsurface drains which were installed during the airport's original construction. Some additional drainage features were added during the late 1950's and early 1960's. The system in general appears to be adequate. However, condition of various features varies. Many pipe culverts are clogged with vegetation and sediment. Field location of many of the infield catch basins was hampered by the extensive vegetative overgrowth.

In general, the drainage system was found to be in Fair condition. Some specific features are in Poor condition.

Electricity, Telephone and Gas Service

Electricity is provided by Arizona Public Service Company. Service is adequate for the intended purposes, but building services and interior wiring do not comply with current building codes.

Telephone service is adequate for the intended purpose.

Natural gas service is provided by Southwest Gas Corporation. Service was found to be adequate.

Airport Visual Aids (Electrical)

Runways 17-35 and 8-26 are equipped with Medium Intensity Runway Lights (MIRL), which were installed in 1976. The MIRL fixtures are outdated and in Poor condition. Runways 17 and 35 are equipped with a Visual Approach Slope Indicator (VASI-2) system which is in Fair condition.

A lighted wind cone was installed in 1960. It is in Fair condition at the present time.

There is an existing rotating beacon located on the roof of Hangar #4.

The beacon is in Good condition, but is of an outdated design which probably consumes much more power than current designs. Replacement parts for this unit may be difficult to acquire.

A Very High Frequency Omni-Range (VOR) transmitter, colocated with a military Tactical Air Navigation (TACAN) transmitter, installed in 1965, was found to be in Good condition.

Water System

The airport's water system includes a 25,000 gallon elevated tank, with distribution, service and fire protection lines. Most of the water system was constructed as part of the original Douglas Airfield in the 1940's. The system serves both the airport and the prison.

Water service to existing airport buildings and to the prison is adequate and facilities are in generally Good condition. However, water valves and hydrants in abandoned and little-used areas of the airport were found to be in Poor condition. Airport management reports that many of the valves are not operable. During the field inventory, several hydrants were found to be broken or leaking. One hydrant was partially buried. Location of valves and hydrants was severely hampered by the extensive overgrowth of vegetation.

Sewer System

An extensive sanitary sewer system was constructed as a part of the original Douglas Airfield. Most of the collection system is still in place and appears to be operational. The airport sewage treatment facilities are located at the south end of the airport property. Until July of 1996, the treatment system was used by both the airport and the prison. Recently, however, the County installed a new septic tank system to serve the airport terminal building and hangars. The treatment system is now utilized and maintained solely by the Arizona Department of Corrections (ADOC).

The sewage treatment facility is currently operated under a Consent Order from the Arizona Department of Environmental Quality (ADEQ). The intent of the County is that the airport and prison will connect to the planned Douglas sanitary sewer system pipeline, to be constructed within 3 to 5 years.

Condition of the collection system and treatment facilities is classified as Fair. The new septic tank is in Good condition.

Airport Fencing

A visual inspection of the airport's entire perimeter fence was not conducted as a part of this master plan. Given the age and state of disrepair of the portions which were inspected, the perimeter fencing will be rated as Fair so that funds to repair or replace the fence will be allocated. Internal fencing, including fencing that separates landside from airside activities is inconsistent, and in needed areas nonexistent.

AIRPORT FINANCIAL SUMMARY

The following is a summary of airport revenues and expenses for the past two years (Fiscal Years 1994-95 and 1995-96), as provided by the Cochise County Department of Facilities & Solid Waste Management. The summary reflects actual revenues collected during each of the Fiscal Years. Expenditures reflect actual cost incurred during the year. All numbers are rounded to the nearest one dollar.

Prior to FY 1994-95, the Bisbee-Douglas International Airport was administrated by a contract Fixed Base Operator. Records are not available.

Bisbee-Douglas International Airport
Revenues - Fiscal Years 1994-95 and 1995-96

REVENUE	FY 94-95	FY 95-96	±
Cash Carry Forward	$175,125	$160,331	-8.4 %
Interest	$7,333	$7,651	4.3 %
Hangar Rent	$9,273	$9,894	6.7 %
Leases	$2,500	$1,000	-60.0 %
Fuel Sales	$14,299	$95,368	567.0 %
ADOC Water Sales	$182,367	$181,833	-0.3 %
Water Sales - Other	$323		-100.0 %
Concessions & Miscellaneous	$3,197	$2,324	-27.3 %
U.S. Forest Service STAUB		$100	100.0 %
TOTAL REVENUES	$394,417	$458,501	16.2 %

Bisbee-Douglas International Airport
Expenditures - Fiscal Years 1994-95 and 1995-96

EXPENDITURE	FY 94-95	FY 95-96	±
Salaries and Benefits	$87,643	$92,360	5.4 %
Supplies	$8,306	$6,487	-21.9 %
Concessions	$4,465	$1,962	-56.1 %
Building/Grounds Maint.	$12,941	$33,287	157.2 %
Vehicle Maintenance	$1,426	$3,284	130.3 %
Gasoline and Diesel Fuel	$2,555	$3,539	38.5 %
Aviation Fuels	$43,266	$44,507	2.9 %
Professional Services	$7,192	$39,474	448.9 %
Telephone Service	$5,562	$5,998	7.8 %
Electricity	$37,806	$51,222	35.5 %
Natural Gas	$2,339	$2,316	-1.0 %
Refuse Disposal	$437	$494	13.0 %
Misc. Equipment	$2,972	$1,832	-38.4 %
Misc. Repairs	$373	$301	-19.3 %
Equipment Leases	$8,484	$8,484	0.0 %
Postage	$176	$67	-61.9 %
Printing and Binding	$310	$185	-40.3 %
Fees and Permits		$1,000	100.0 %
Liability Insurance	$5,500	$3,350	-39.1 %
Inmate Labor	$2,021	$2,913	44.1 %
TOTAL	$233,774	$303,062	29.6 %

Between the two record years, the airport revenues increased by just over 16%, while expenditures increased by nearly 30%. It should be assumed that expenditures for the next several years will increase significantly because of the apparent need for major reconstruction of the existing airport infrastructure. An increase in airport maintenance costs should also be included in future annual budgets.

Over the past two years of record, the largest contributor to airport revenues has been water sales to the Arizona Department of Corrections (ADOC). Prior to July, 1996, the rate charged the ADOC was $1.45/1,000 gallons. The current rate has been reduced to $0.83/1,000 gallons as part of a new agreement concerning operation and use of the sewage treatment facility. Future revenues will, of course, reflect this decrease.

Another apparently good source of income has been the sale of aviation fuels, particularly jet fuel. During the two years of record, a profit on fuel sales of nearly $22,000 was realized. Fuel sales will most probably increase after airport improvements are made and use of the BDI airport by transient aircraft increases.

EXISTING AIRPORT LAND USE

Except for the prison site, which is leased by the Arizona Department of Corrections, all airport land is currently aviation-use. The entire airport property (including the prison site) is currently zoned PD-2 - Planned Development for Non-residential Purposes.

The land surrounding the airport is currently zoned RU-4 - Residential Use - Minimum 4-acre Parcel Size. All adjacent land is currently vacant. Much of the adjoining land belongs to the State of Arizona. Figure 2-11, Airport Land Use Map, at the end of this section, provides an illustration of the current airport land usage and zoning.

THE COCHISE COUNTY AIRSPACE SYSTEM

The Cochise County airspace system is illustrated in Figure 2-12 at the end of this section.

The BDI airport is located beneath an area of Class G (uncontrolled) airspace which is overlain by the Tombstone C Military Operations Area (MOA). The Tombstone A and B MOA's are located to the north and east of BDI, respectively. The Tombstone C MOA includes airspace vertically from 14,500' MSL up to, but not including, 18,000' MSL (Flight Level 180). The Tombstone A and B MOA's include

airspace vertically from 500' AGL up to, but not including 14,500' MSL. The Tombstone MOA's are active Monday through Friday from 1300 until 0400 GMT.

MOA's are designed to confine military training operations within a specific area. They are not restricted airspace. Therefore, civilian pilots may transit an MOA, but should maintain radio communications with the controlling entity (Albuquerque Center in this case).

Restricted Areas may not be entered by civilian aircraft without specific permission from the controlling entity.

The R-2303A and R-2303B Restricted Areas are located directly west of BDI. These are roughly centered on the Sierra Vista/Libby AAF airfield. R-2303A includes the airspace from the surface to 15,000' MSL. R-2303B includes the airspace from 15,000' MSL to Flight level 250. Both Restricted Areas are active Monday through Friday from 0700 until 1600 GMT, and other times by Notice to Airmen (NOTAM).

The Contiguous U.S. Air Defense Identification Zone (ADIZ) parallels the U.S./Mexico border, approximately 8 miles south of BDI.

Another Restricted Area, R-2312, is located about 40 miles west of BDI. This area includes airspace from the surface up to 15,000' MSL, and is in operation continuously. The airspace protects a cable-moored surveillance balloon and cable which is used to monitor air traffic through the Contiguous U.S. ADIZ.

Two military training routes, VR-259 and VR-263, transit the area near BDI. Most of the military training activity on these routes is from the Libby AAF, Davis Monthan (Tucson), and Luke (Phoenix) Air Force Bases. This activity will most probably continue throughout the time frame of this study.

Victor Airway V66 passes directly over the onsite DUG VORTAC transmitter at BDI. The minimum enroute altitude for aircraft on IFR flight plans along this route is 11,000' MSL east of BDI and 9,500' MSL west of BDI.

No apparent conflicts between the existing activity at BDI and the present airspace structure and use have been noted.

AIRPORT SERVICE AREAS

In determining the service area for the Bisbee-Douglas International Airport, it is important to consider the airport's various roles within the regional airport system. While the BDI airport is currently designed to accommodate scheduled commercial service, there are no current scheduled airline operations. The present role of BDI is service to the general aviation community, which includes business travel, sport aviation, and training, as well as private use of light aircraft.

As noted above, there are presently 24 general aviation aircraft based at BDI.

In theory, an airport service area for a particular role or function extends halfway to nearby airports which are capable of serving the same function.

Current FAA planning guidelines for airport siting indicate that a general aviation airport should be located no more than thirty minutes driving time from business, charter and private aircraft users. This is a valid assumption, since the main advantage in flying is the savings in long distance travel time.

Service areas for scheduled air carriers may typically be much greater (or smaller) in area than for general aviation users, and depend highly upon the level of carrier providing service on specific routes, the condition of the local and national economy and airline fare schedules, as well as many conditions which may be unique to specific locations, such as availability of existing ground transportation options and public sentiment toward the airline providing service.

Air Carrier Service Area

In determining the theoretical service area for scheduled air carrier operations, no consideration was given to the variables mentioned above. The service area, as illustrated in Figure 2-13 at the end of this Section, was developed by connecting equidistant points (based on approximate driving time) between BDI and competing airports currently providing scheduled service. These are Tucson International Airport to the northwest, and Sierra Vista/Libby AFB to the west.

The actual air carrier service area will vary with changes in the economy and other local and regional factors. For example, at the present time most travelers residing in Cochise County who require long haul airline service will most probably drive to Tucson (or Phoenix) to make their flight, rather than drive a lesser distance to

Sierra Vista for a short haul connector flight. This is primarily an economic decision, based upon the currently available levels of service and fares. It is assumed that this would also be the case if commuter service were available at BDI.

The service area presented in Figure 2-13, then, represents the *theoretical maximum achievable air carrier service area* for BDI, under assumed prime conditions, if limited only by geographic constraints.

The Bisbee-Douglas International Airport and the Sierra Vista/Libby AAF facility are the only airports within Cochise County with the land potential to accommodate a long enough runway to serve larger airline traffic. It is also interesting to note that, other than Sierra Vista, the BDI facility is the only airport in the county with the potential for future installation of an instrument approach to visibility minimums of less than 3/4 mile - an important feature for serving future airline traffic (Sierra Vista already has this type of approach - an ILS - in order to serve existing military users).

The following is a list of some representative multi-engined turboprop commuter airliners and jet airliners which could be accommodated at BDI, based on the present main runway length of 7,300' at a density altitude of 6,978 feet (4,100' MSL and 90°F):

REPRESENTATIVE AIR CARRIER AIRCRAFT WHICH COULD BE ACCOMMODATED AT BDI
7,300' Runway Length - 90°F

Model	AppSpeed	WingSpan	TOweight	RWindex
DHC-7	86	93.00	44000	3893
DHC-8-100	94	85.00	34400	4498
Gulfstream I	113	78.30	34000	6342
Merlin IVC	113	57.00	16000	6044
Metro III	112	46.20	16000	6393
Saab 340B	104	70.33	30000	7236
Saab-Fairchild SF 340A	104	70.33	28000	6690
Metro II SA226-TC	112	46.25	12500	4342
Boeing 727-100 JT8D-7	125	108.00	130000	6591
Boeing 767-200 PW4052	130	156.08	280000	6444
Boeing 767-300 PW4052	130	156.08	280000	6468
DC-9-11 JT8D-1	134	89.40	77750	6839
DC-9-12 JT8D-1	134	89.40	79500	7190

Source: AcData v6.10

General Aviation Service Areas

In determining the airport's general aviation service area, it was assumed that aircraft owners choose to base their aircraft at the airport which is closest to their residence, which will provide the level of services required by their particular need. All other factors being equal (such as the condition of the airports' facilities) the determining factor in this decision is almost always the length of paved runway which is required by the type of aircraft to be operated.

With this in mind, three general aviation service areas were defined for BDI airport. These are presented in Figure 2-14 at the end of this section.

The first service area represents the connection of approximate equidistant points between BDI and the closest neighboring airfields which would serve piston engined singles and twins with gross takeoff weights of 12,500 pounds or less, with wingspans of less than 79 feet, approach speeds of less than 121 knots, and requiring a runway length of no more than 5,000 feet.

In determining runway length requirements, a 6,978 foot density altitude is assumed (90 degrees Fahrenheit and 4,100' MSL).

These aircraft conform to ARC B-II. Some representative aircraft included in this grouping are as follows:

REPRESENTATIVE AIRCRAFT
5,000' RUNWAY SERVICE AREA

Model	AppSpeed	WingSpan	TOweight	RWindex
Cessna 172	60	36.00	2400	2994
Cessna 177B	60	35.50	2500	2555
Cessna 182Q	64	36.00	2950	2465
Cessna 210N	73	36.80	3800	1994
Piper PA-32-300 (Six)			3400	3391
Beechcraft B200	98	54.50	12500	4247
Beechcraft B200*	98	54.50	11000	3996
Merlin IVC	113	57.00	12500	4323
Cessna 441	99	49.30	9850	4863
Cessna 441*	99	49.30	7800	4258

Source: AcData v6.10

* Indicates reduced takeoff weight

The neighboring airports with a runway length of 5,000 feet or more follow:

NEAREST NEIGHBORING AIRPORTS OFFERING 5,000' RUNWAY

Airport	Distance from BDI	Longest Runway
Douglas Municipal	9 nm	5,400'
Cochise College	8 nm	5,300'
Bisbee Municipal	15 nm	5,900'
Willcox/Cochise County	49 nm	6,100'
Benson	45 nm	

The second general aviation service area represents that which would serve piston engined and turboprop singles and twins, as well as business jets, with gross takeoff weights of 30,000 pounds or less, with wingspans of less than 79 feet, approach speeds of less than 121 knots, and requiring a runway length of no more than 7,300 feet at a 6,978 foot density altitude.

A list of some representative aircraft in this grouping is included on the following page. These aircraft conform to ARC B-II.

The nearest public airports with a runway length of 7,300 feet or more are as follows:

NEAREST NEIGHBORING AIRPORTS OFFERING 7,300' RUNWAY

Airport	Distance from BDI	Longest Runway
Sierra Vista	39 nm	12,000'
Tucson International	79 nm	11,000'

REPRESENTATIVE AIRCRAFT
7,300' RUNWAY SERVICE AREA

Model	AppSpeed	WingSpan	TOweight	RWindex
Falcon 20*	107	53.50	18000	3396
Falcon 20	107	53.50	26000	5990
Falcon 200*	114	53.50	20000	3598
Falcon 200	114	53.50	26000	4496
Falcon 50*	113	61.90	22000	3396
Falcon 50	113	61.90	30000	3894
Falcon 900	100	63.40	28000	3147
Merlin IVC	113	57.00	16000	6044
Saab 340B	104	70.33	30000	7236
Saab 340B*	104	70.33	25000	4518
Saab-Fairchild SF 340A	104	70.33	28000	6690
Saab-Fairchild SF 340A*	104	70.33	25000	4993
Westwind Astra	110	52.67	23000	6694
Westwind Astra*	110	52.67	20000	5244
Embraer EMB-120	108	64.90	25353	6642
Embraer EMB-120*	108	64.90	24000	5744
Sabreliner NA-265-65	105	50.50	19000	6241

Source: AcData v6.10

* Indicates reduced takeoff weight

INVENTORY OF BASED AIRCRAFT

In order to validate the general aviation service area assumptions, the addresses of the owners-of-record of the aircraft which are currently based at BDI were examined.

The number of aircraft owned by residents of various communities were grouped together and plotted on the General Aviation Service Areas Map (Figure 2-14), at the end of this section. The third service area shown on Figure 2-14 is a representation of the *actual based aircraft service area.* This service area encompasses the communities within Cochise County in which owners of presently based BDI aircraft currently reside.

The aircraft which were based at BDI airport as of October, 1996 are listed in the following table.

PRESENT BASED AIRCRAFT
BISBEE-DOUGLAS INTERNATIONAL AIRPORT
October, 1996

Registration	Model	Owner's Residence
N7079Y	Piper Twin Comanche	Douglas, AZ *
XB-JUT	Cessna 182	Douglas, AZ
N1925J	Cessna 337A	Bisbee, AZ
n/a	Ultralight	Bisbee, AZ
N4308W	Beechcraft Baron	Portal, AZ
N142EZ	Cessna 150	Tombstone, AZ
N89LC	RV-4	Tombstone, AZ
N91655	Navion NA1	Sierra Vista, AZ *
N7742T	Cessna 172	Fort Huachuca, AZ
N8659Q	Cessna 185F	Green Valley, AZ
N8070T	Cessna 175 (inoperative)	Douglas, AZ
N9969M	Cessna 206	Douglas, AZ
N3582C	Cessna 170	Bisbee, AZ
N2989X	Cessna 177 Cardinal	Bisbee, AZ
N23076	Cessna 150	Bisbee, AZ
n/a	n/a	Thatcher, AZ
N472M	Martin 404 (inoperative)	Kansas City, MO
N14385	Cessna 182	n/a
N18VX	Viper (homebuilt)	Douglas, AZ
N6GZ	Gazelle (homebuilt)	Douglas, AZ
N602JB	Pitts S1S	Douglas, AZ
n/a	LaMouette (ultralight)	Douglas, AZ
n/a	Challenger-I (ultralight)	Douglas, AZ
**	Sprint-II (homebuilt)	Douglas, AZ

* indicates seasonally based aircraft.
** under construction

Of the 24 aircraft currently based at BDI, there are 4 multi-engined types. One of these, a Martin 404, is currently inoperative.

The 20 single-engine aircraft include one inoperative aircraft, a Cessna 175, as well as on homebuilt which is currently under construction.

SHORT-TERM TRAFFIC OBSERVATIONS

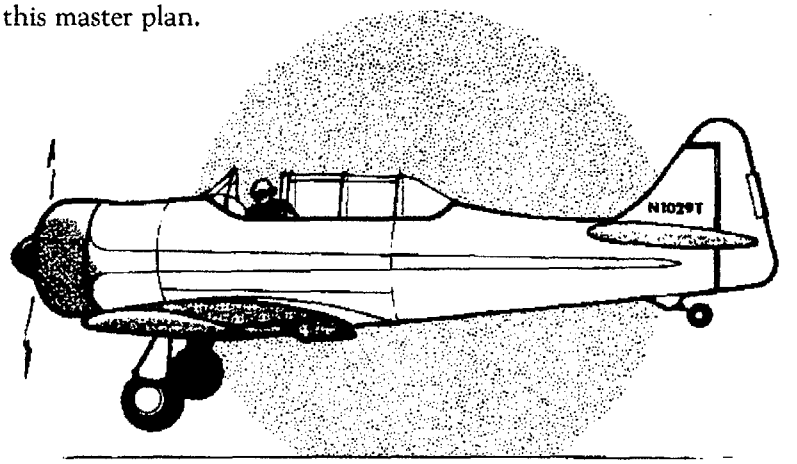
A two-day traffic observation was made during the field inventories. This survey was conducted on October 8th and 9th, 1996, during daylight hours - 8:00 AM until 5:30 PM. The weather on both days was clear, with unrestricted visibility and light winds. Temperatures ranged from 70's in the morning hours to the 90's in the afternoon.

16 operations were observed on October 8th. Four of these were by business jets, arrivals and departures by a Lear 25 and a Sabreliner. Four touch-and-go operations were observed. Three operations were by multi-engined propeller aircraft. Six operations were confirmed to be for training purposes, including the 4 touch-and-go operations.

17 operations were observed on October 9th. No jet operations were observed on this date. Nine touch-and-go operations were observed, including two by multi-engined propeller aircraft (a Beechcraft Baron).

For both days, 24 of the observed operations were either touch-and-go or departures, an average of 12 per day. If the assumption is made that over a year's time total arrivals will equal total departures, and if the operations observed during this two-day period were to be accepted as representative of average daily demand, the annual activity at BDI would total approximately 8,700 operations. The 1994 Cochise County Airport System Plan estimated 6,000 annual operations in 1992, and projected an increase to 7,500 operations by 1997.

Information regarding annual activity in this section is offered only as validation for prior planning efforts. In-depth analysis and determination of existing activity is included in the Forecasts section of this master plan.



WIND DATA ANALYSIS

The overall operational safety of an airport is affected by the direction of its runways in relationship to the prevailing wind. In general terms, smaller aircraft are affected more by wind, although wind conditions will affect operation of any aircraft to some degree. Crosswinds are often a contributing factor in light aircraft accidents. Therefore, orientation of the runway such that it is aligned with the prevailing wind for the greatest percentage of the time will add substantially to the safety and usefulness of the airport.

The *crosswind component* of wind direction and velocity is defined as the resultant vector which acts at right angles to the runway centerline, and is equal to the wind velocity multiplied by the sine of the angle between the wind direction and the runway direction.

Wind coverage is defined as the percentage of the time that the crosswind components are below an acceptable velocity. These acceptable velocities vary with the airport's design Airport Reference Code (ARC), as follows:

Acceptable Crosswind Components
for Various Airport Reference Codes (ARC)

ARC A-IV through D-VI	20.0 knots
ARC A-III, B-III, and C-I through D-III	**16.0 knots**
ARC A-II and B-II	13.0 knots
ARC A-I and B-I	**10.5 knots**

Source: FAA AC 150/5300-13, Appendix 1

The most desirable runway orientation based on wind is the one which has the greatest wind coverage. The FAA recommends a minimum wind coverage of 95%. If a single runway cannot meet this criteria, a crosswind runway is recommended, aligned such that the total wind coverage for the two runways will be at least 95%.

The BDI Airport currently has two active runways, 17-35 and 8-26. There are also two abandoned runways which are not usable due to their condition (Runways 3-21 and 12-30).

Digital wind data collected at the BDI Airport for the 1986 through 1996 period was used in the wind analysis for this study. The source

of the data was the National Climatic Data Center in Asheville, North Carolina.

The BDI Airport's design Airport Reference Code is ARC C-II (see Section 3, Forecasts of Aviation Activity). However, the airfield will be used by a wide range of aircraft types, including those in the ARC A-I and B-I categories. Wind will potentially have the greatest effect on the safety of operations of these light aircraft.

In order to form an accurate basis for runway development recommendations, three separate wind data analyses were undertaken for each of the active and inactive runway alignments and for the six various combinations of potential dual-runway systems, considering both the 16 knot (ARC C-II) and 10.5 knot (ARC A-I/B-I) situations, as follows:

1. Annual/All-Weather data analysis.
2. Peak Month/All-Weather data analysis (June).
3. High-Wind analysis (considering only winds over 16 knots) - using Annual/All-Weather data.

The resulting wind coverages were computed using the FAA's Airport Design Wind Analysis software. The results of the computations are tabulated on the following pages.

16-knot Analysis

When these results of the 16-knot analysis are examined, it becomes apparent that there is very little difference in relative wind coverage between various runways or combinations in both the Annual/All-Weather and the Peak Month/All-Weather analyses. Any of the single-runway or dual-runway choices result in coverage of over 98%. Most are over 99%.

However, obvious differences are apparent when the results of the High-Wind analysis are compared. Runway 3-21 is by far the best alignment when the wind is over 16 knots, with coverage of 83.14%. Runway 8-26 follows with 73.95% coverage. High wind coverage on Runways 17-35 and 12-30 is fairly poor in comparison, with 47.87% and 37.14% respectively.

10.5-knot Analysis

The results of the 10.5 knot wind analysis indicates that none of the runways will provide the recommended 95% coverage when considered by themselves, in a standard FAA analysis of annual data. Runway 3-21 would provide the best 10.5 knot coverage, at 94.72%. Runway 3-21 is also best in terms of the Peak Month coverage (93.34%), and the High-Wind analysis (60.94%).

Analysis of the various dual-runway combinations indicates that any combination except 17-35 + 12-30 will provide coverage over the FAA recommended 95% threshold. The best 10.5 knot coverage would be provided by Runway 3-21 + 12-30 in both the Annual (99.11%) and the Peak Month analyses (99.03%). The dual-runway combination of Runways 3-21 + 8-26 would provide the best High Wind analysis coverage (83.13%).

Bisbee-Douglas International Airport
Results of Wind Data Analysis (16 knot Coverage)

Single-Runway

Runway	Annual	Peak Month	Over 16 knots
17-35	98.63%	98.60%	47.87%
8-26	99.30%	99.25%	73.93%
12-30	98.43%	98.22%	37.14%
3-21	**99.52%**	**99.53%**	**83.14%**

(The best wind coverages in each column are indicated in **bold** *text)*

Dual-Runway Combinations

Runway	Annual	Peak Month	Over 16 knots
17-35+8-26	99.93%	99.94%	96.74%
17-35+3-21	99.81%	99.87%	91.49%
17-35+12-30	99.30%	99.20%	68.74%
3-21+12-30	**99.96%**	**99.98%**	**98.09%**
3-21+8-26	99.88%	99.90%	94.85%
8-26+12-30	99.66%	99.66%	84.63%

(The best wind coverages in each column are indicated in **bold** *text)*

Wind Data Source: Bisbee-Douglas International Airport records for 1986 through 1996, from National Climatic Data Center, Asheville, NC
(Calculations made using the FAA Wind Analysis Software)

Bisbee-Douglas International Airport
Results of Wind Data Analysis (10.5 knot Coverage)

Single-Runway

Runway	Annual	Peak Month	Over 16 knots
17-35	91.13%	89.45%	21.43%
8-26	94.48%	92.46%	46.10%
12-30	91.33%	89.17%	14.15%
3-21	**94.72%**	**93.34%**	**60.94%**

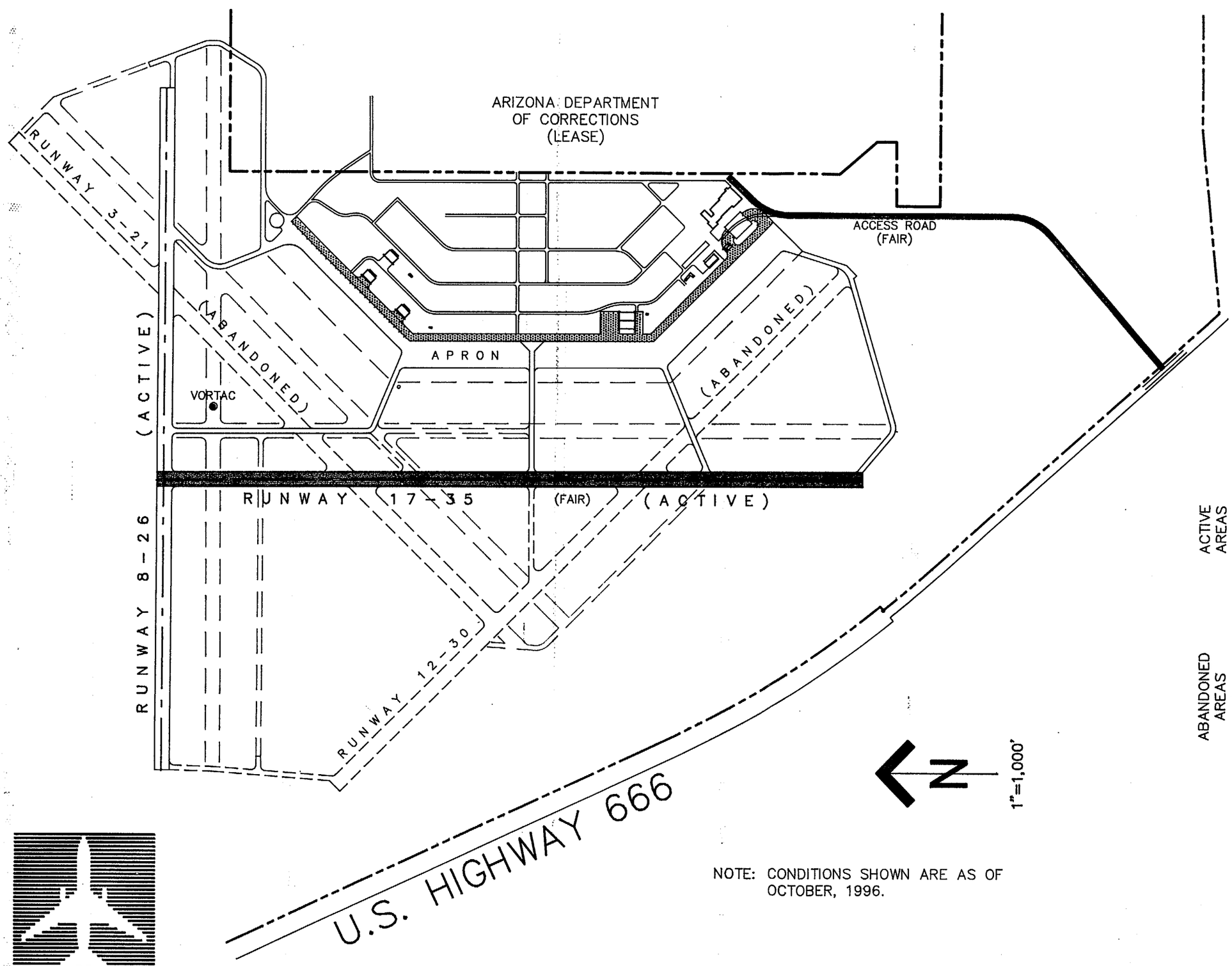
(The best wind coverages in each column are indicated in **bold** *text)*

Dual-Runway Combinations

Runway	Annual	Peak Month	Over 16 knots
17-35+8-26	99.01%	98.84%	67.53%
17-35+3-21	97.38%	96.84%	72.02%
17-35+12-30	94.54%	93.69%	32.00%
3-21+12-30	**99.11%**	**99.03%**	75.09%
3-21+8-26	97.82%	97.16%	**83.13%**
8-26+12-30	97.17%	96.08%	54.45%

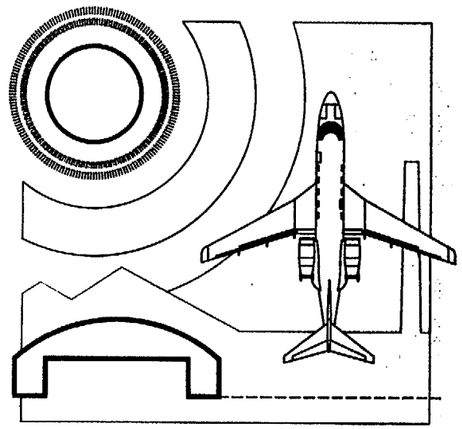
(The best wind coverages in each column are indicated in **bold** *text)*

Wind Data Source: Bisbee-Douglas International Airport records for 1986 through 1996, from National Climatic Data Center, Asheville, NC
(Calculations made using the FAA Wind Analysis Software)



NOTE: CONDITIONS SHOWN ARE AS OF OCTOBER, 1996.

December 4, 1996



BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

ACTIVE AREAS

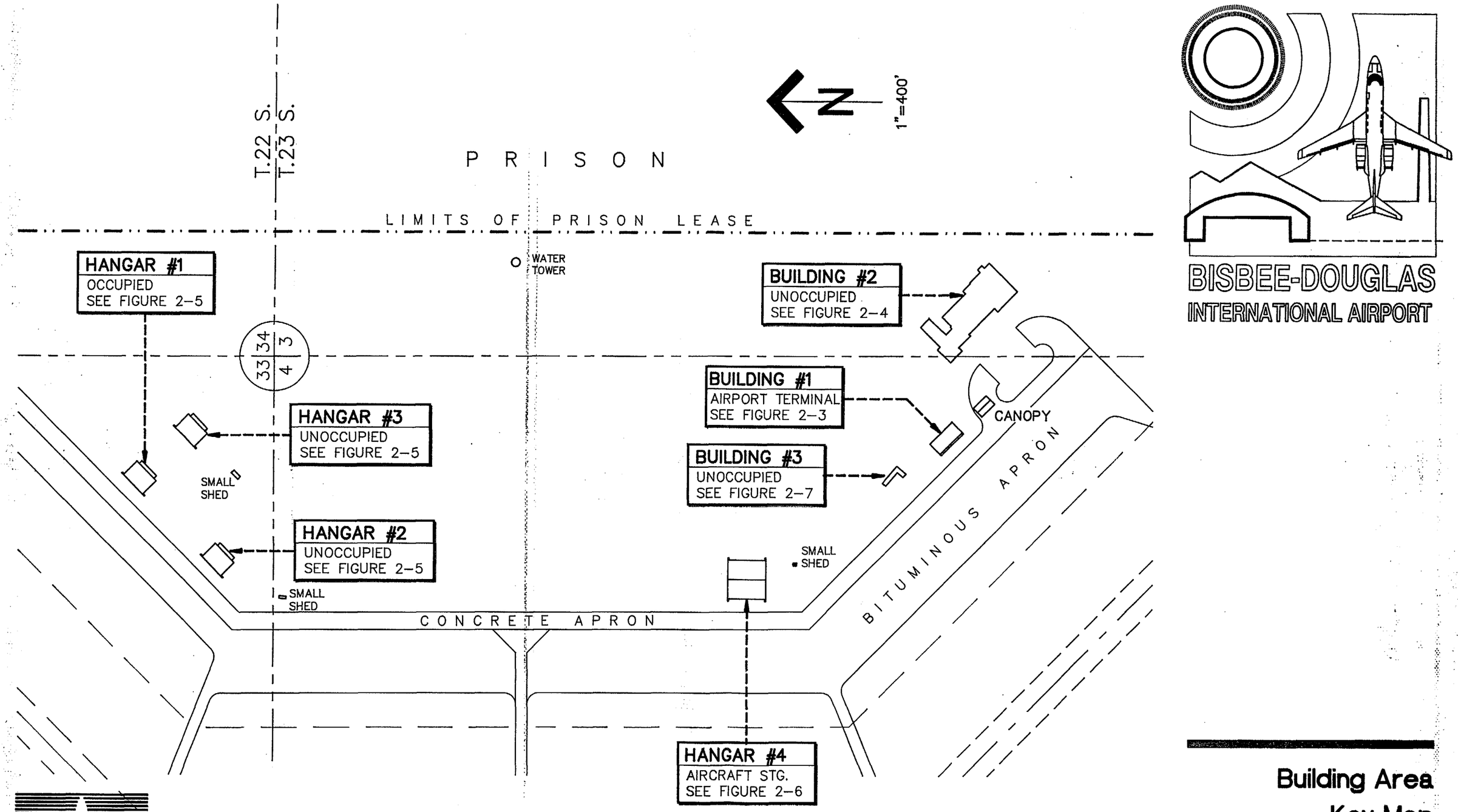
- INDICATES EXISTING CONCRETE PAVEMENT IN FAIR CONDITION
- INDICATES EXISTING BITUMINOUS PAVEMENT IN FAIR CONDITION
- INDICATES EXISTING BITUMINOUS PAVEMENT IN POOR CONDITION

ABANDONED AREAS

- INDICATES VISIBLE BITUMINOUS PAVEMENT NOT USEABLE
- INDICATES PRIOR BITUMINOUS PAVEMENT (BORROW AREA)

Pavement Condition Index Map

Figure 2-1

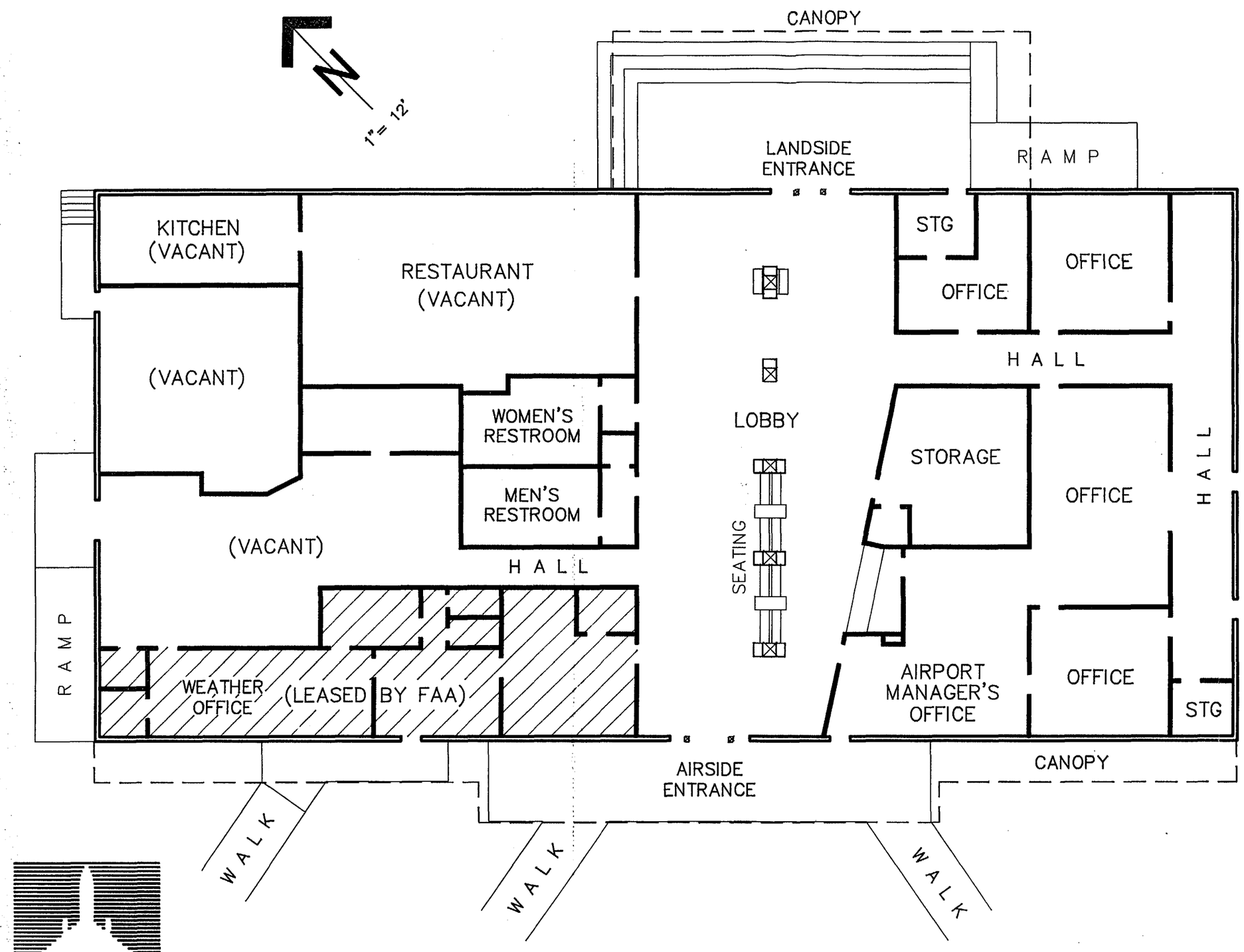


BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

Building Area Key Map

December 4, 1996

Figure 2-2

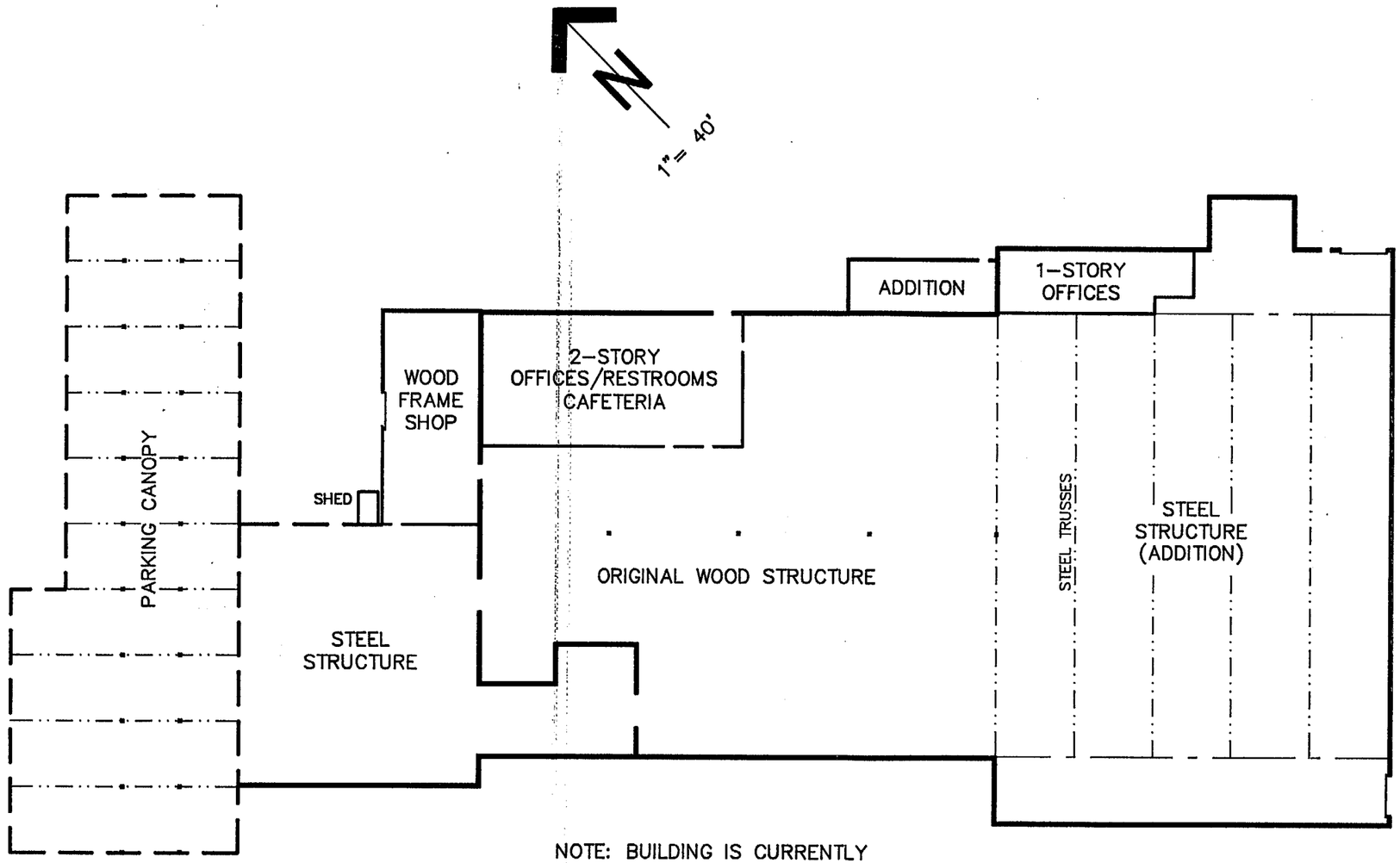


BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

Revised: April 16, 1997

Building #1
Airport Terminal
Floor Plan Sketch

Figure 2-3



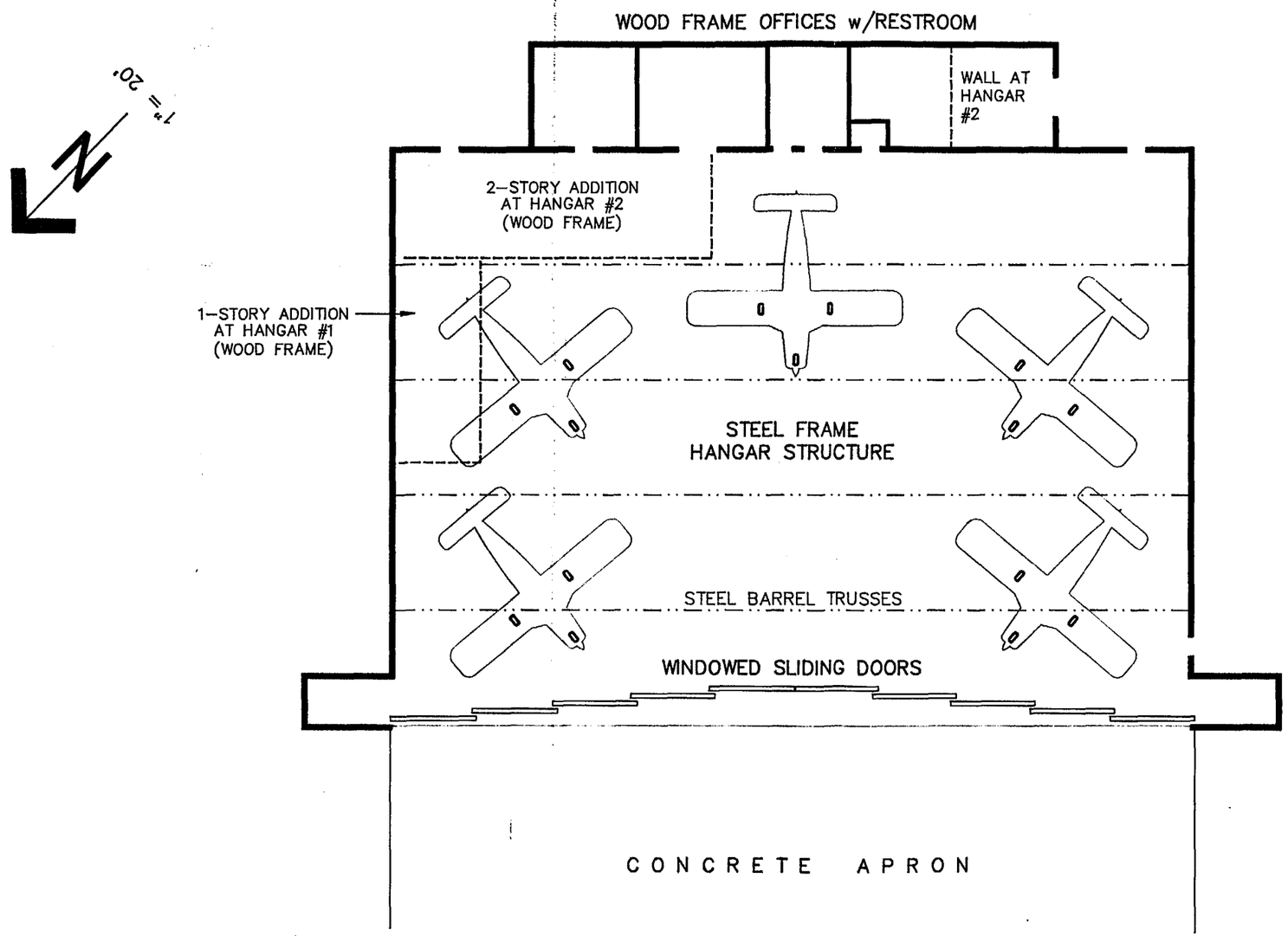
NOTE: BUILDING IS CURRENTLY NOT OCCUPIED.

BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

Building #2
Floor Plan Sketch

December 4, 1996

Figure 2-4



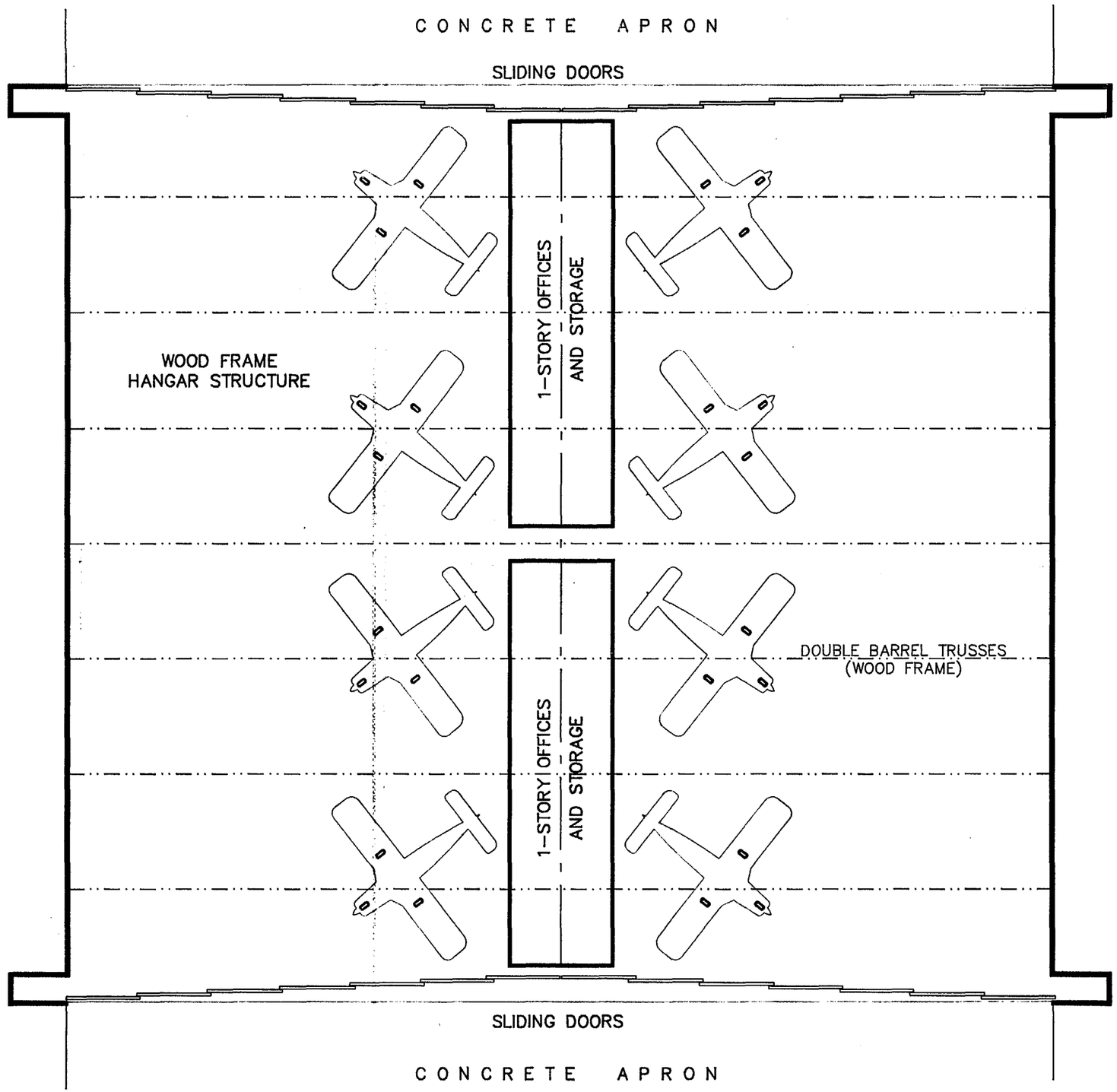
BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

CAPACITY OF EACH HANGAR IS 5 OR 6 AIRCRAFT, ASSUMING NO WING OVERLAP.

Hangars #1, #2, #3 Floor Plan Sketch

Figure 2-5

December 4, 1996



N

1"= 20'

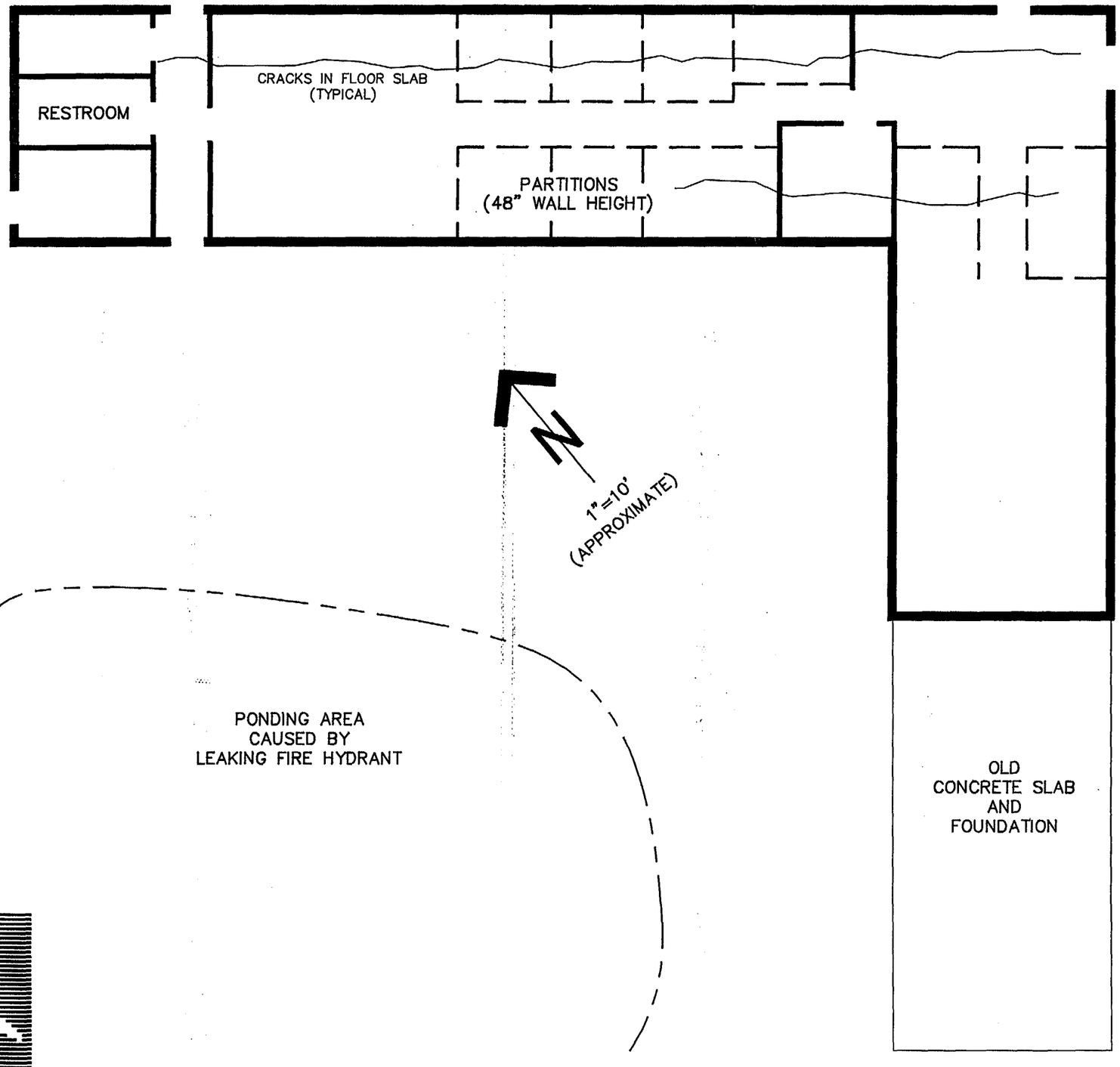
BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

APPROXIMATE CAPACITY OF HANGAR #4 = 8 AIRCRAFT, ASSUMING NO WING OVERLAP.

Hangar #4
Floor Plan Sketch

Figure 2-6

December 4, 1996



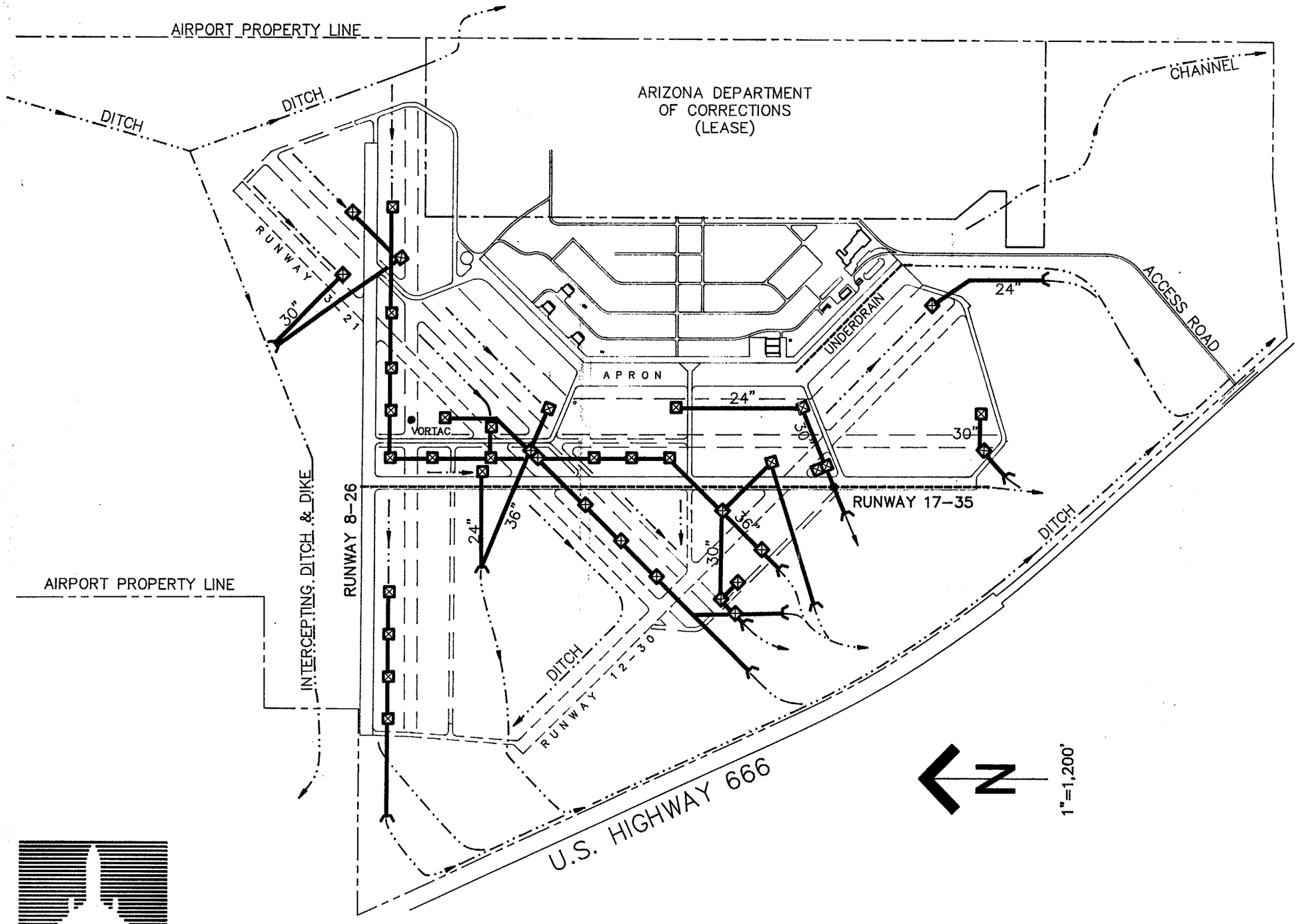
BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

BUILDING IS PRESENTLY NOT OCCUPIED.

Building #3
Floor Plan Sketch

Figure 2-7

December 4, 1996



BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

INDICATES EXISTING CATCH BASIN

INDICATES EXISTING STORM DRAIN PIPE

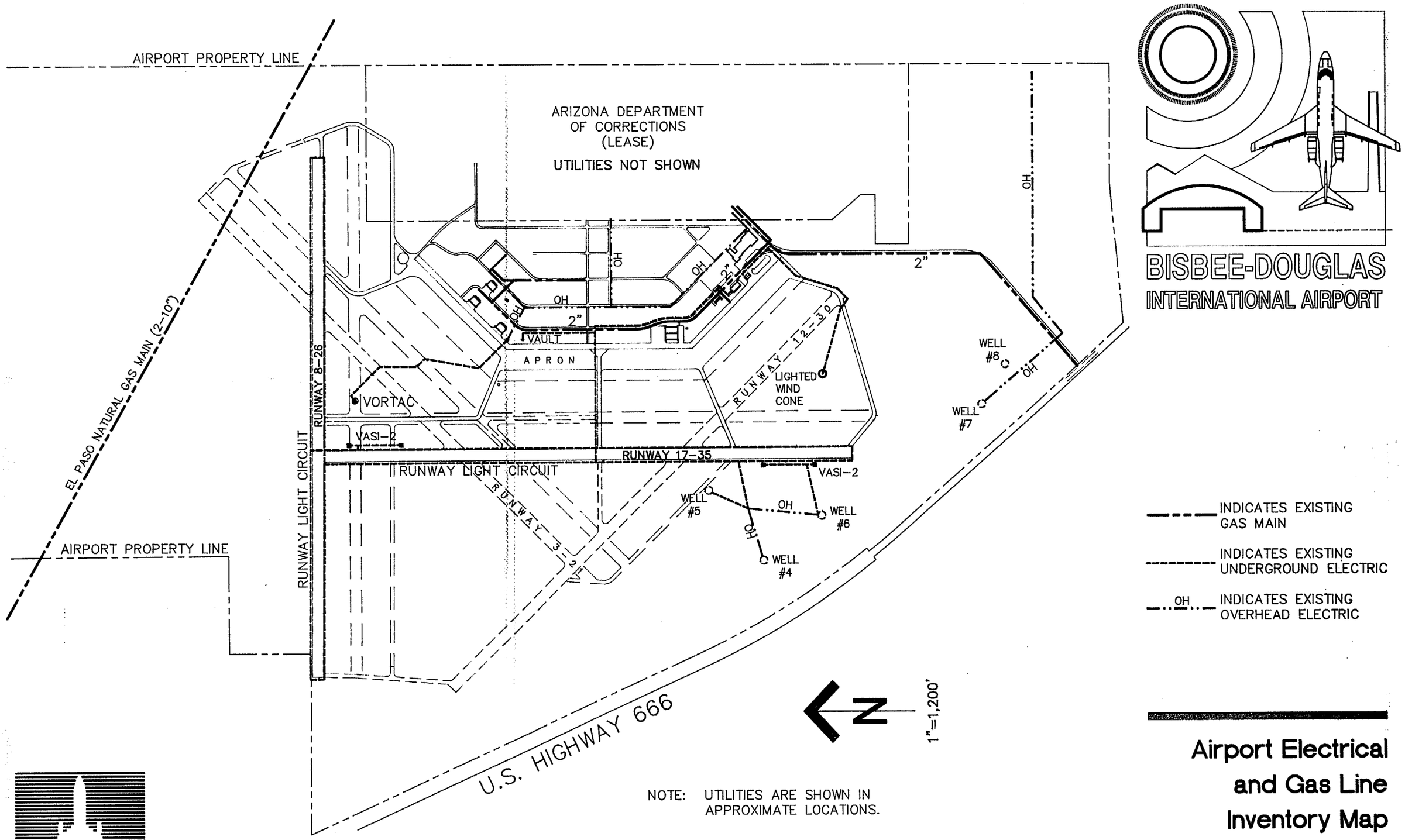
INDICATES EXISTING DITCH OR SWALE

INDICATES EXISTING PERFORATED UNDERDRAIN

Airport Drainage Map

Figure 2-8

December 4, 1996



NOTE: UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS.

BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

INDICATES EXISTING GAS MAIN

INDICATES EXISTING UNDERGROUND ELECTRIC

OH INDICATES EXISTING OVERHEAD ELECTRIC

Airport Electrical and Gas Line Inventory Map

Figure 2-9

December 4, 1996

NOTE: ALL SANITARY SEWER MAINS ARE 8" UNLESS INDICATED OTHERWISE.

ALL WATER MAINS ARE 6" UNLESS INDICATED OTHERWISE.

UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS.

ARIZONA DEPARTMENT OF CORRECTIONS (LEASE)

UTILITIES NOT SHOWN

RESERVOIR AND PUMPHOUSE

WATER TOWER

ACCESS ROAD

TO SEWAGE TREATMENT FACILITY

TWY T-4

TWY T-3

TWY T-2

TWY T-1

RUNWAY 17-35

WELL #4

WELL #5

WELL #6

WELL #7

WELL #8

INDICATES EXISTING SANITARY SEWER MAIN

INDICATES EXISTING WATER MAIN

Ⓕ INDICATES EXISTING FIRE HYDRANT LOCATION

N

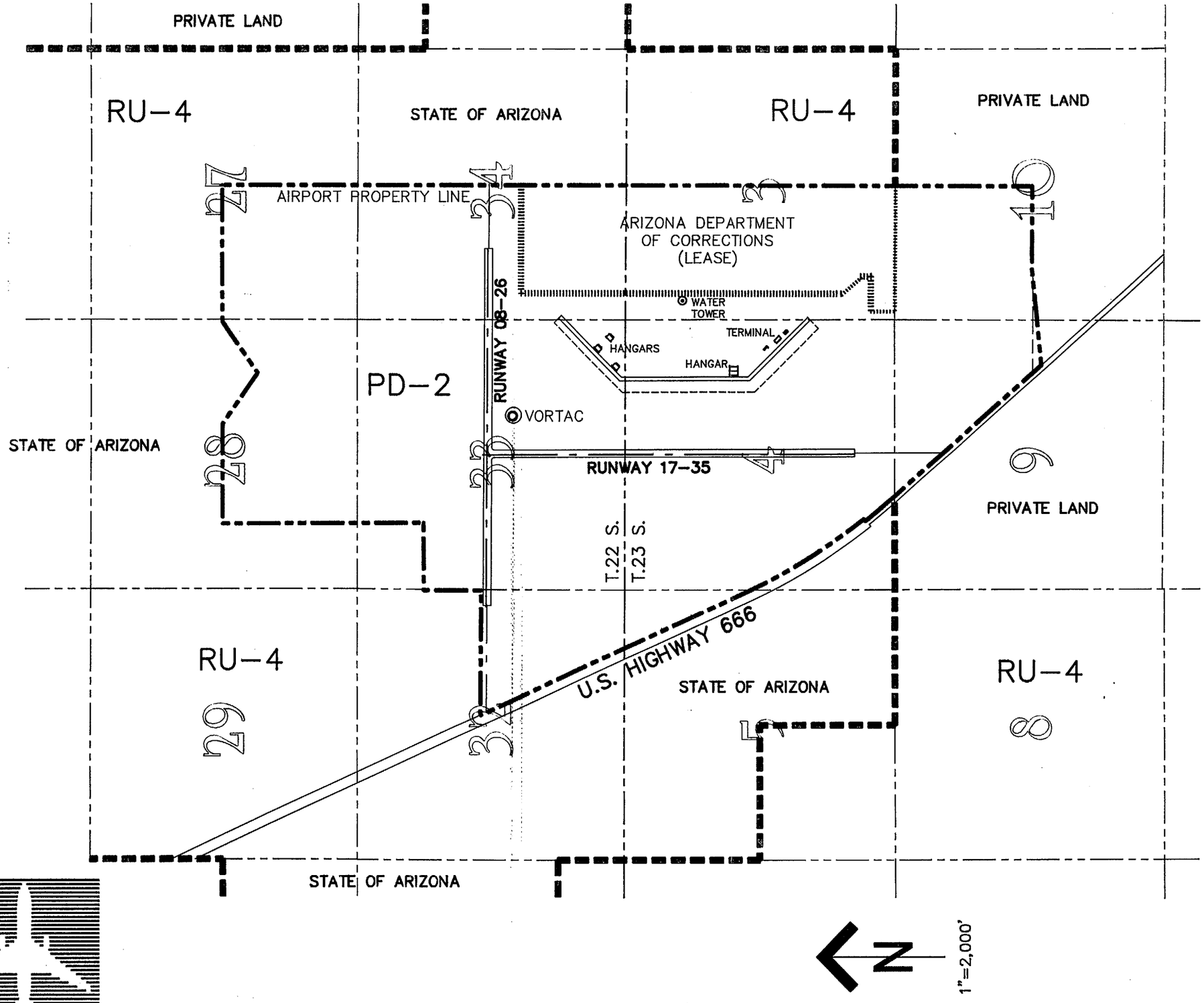
1"=600'

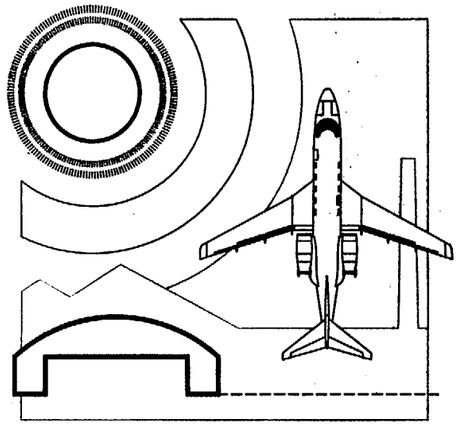
BISBEE-DOUGLAS INTERNATIONAL AIRPORT

Airport Water and Sewer Systems

Figure 2-10

December 4, 1996





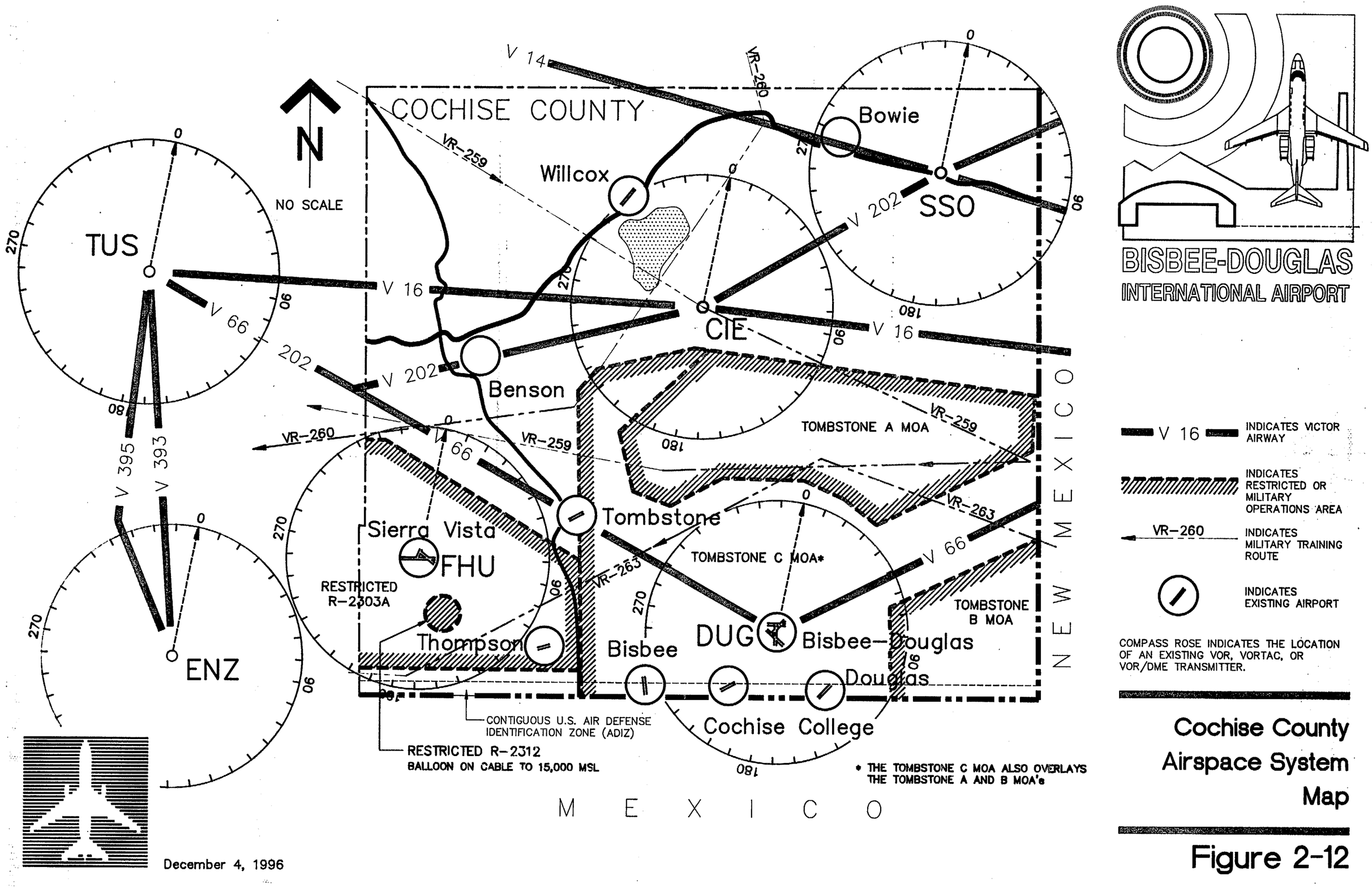
BISBEE-DOUGLAS INTERNATIONAL AIRPORT

RU–4	INDICATES EXISTING RESIDENTIAL USE ZONING (4 ACRE MINIMUM LOT SIZE)
PD–2	INDICATES EXISTING PLANNED DEVELOPMENT – NONRESIDENTIAL ZONING
▬ ▬ ▬	INDICATES LIMITS OF ADJOINING STATE LANDS
▮▮▮▮▮▮▮▮▮▮	INDICATES LIMITS OF ADOC LEASE (PRISON SITE)

Airport Land Use Map

Figure 2-11

December 4, 1996



BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

V 16 INDICATES VICTOR AIRWAY

INDICATES RESTRICTED OR MILITARY OPERATIONS AREA

VR–260 INDICATES MILITARY TRAINING ROUTE

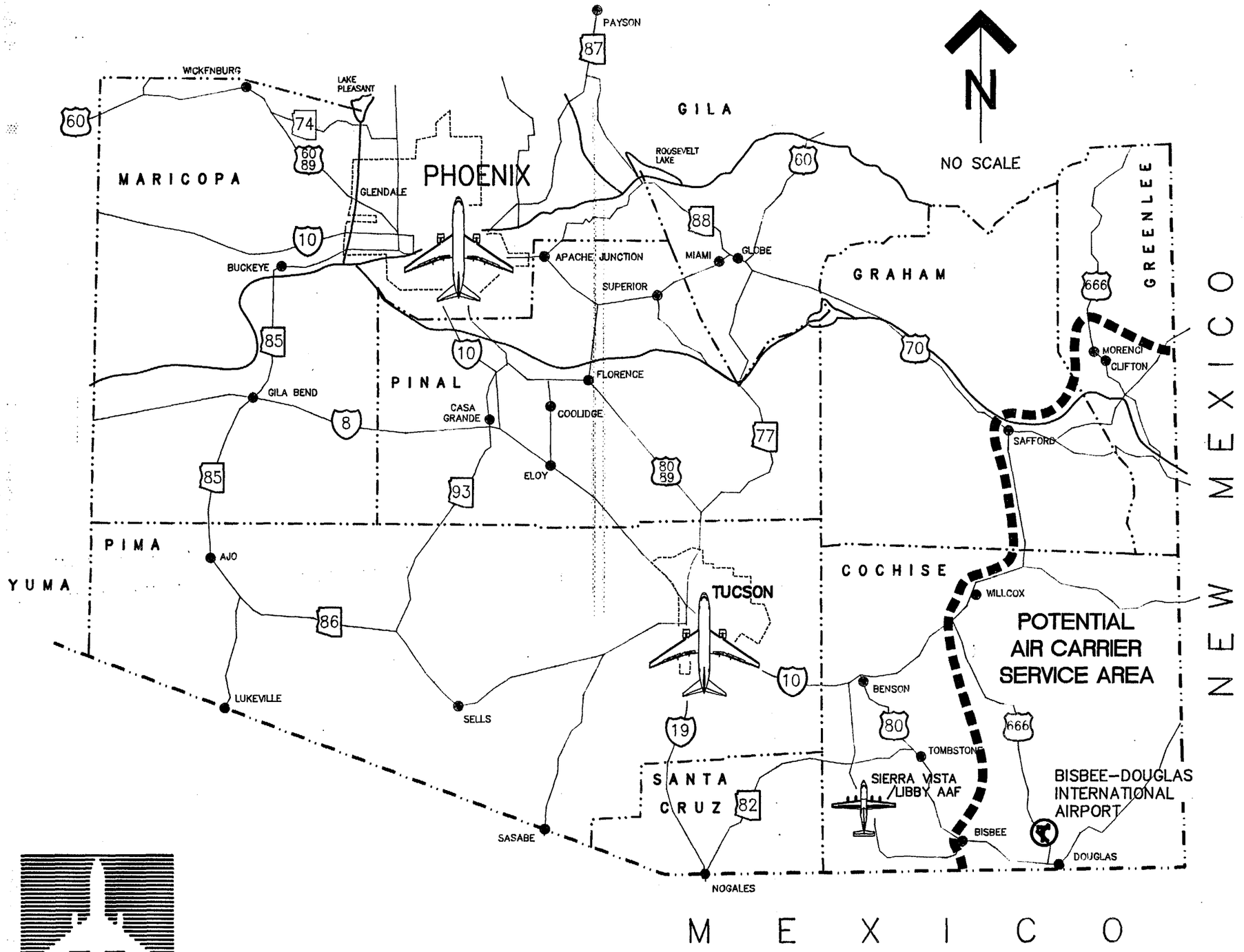
INDICATES EXISTING AIRPORT

COMPASS ROSE INDICATES THE LOCATION OF AN EXISTING VOR, VORTAC, OR VOR/DME TRANSMITTER.

Cochise County Airspace System Map

December 4, 1996

Figure 2-12



BISBEE-DOUGLAS
INTERNATIONAL AIRPORT

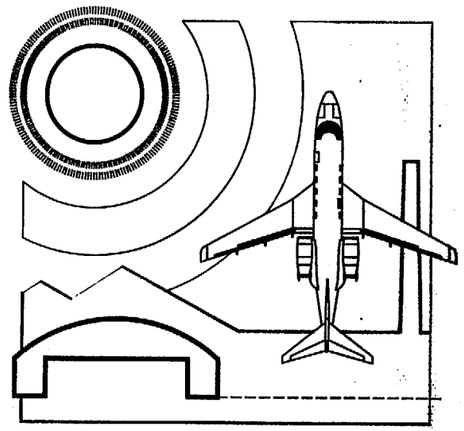
INDICATES AIRPORT WITH EXISTING MAJOR AIRLINE SERVICE

INDICATES AIRPORT WITH EXISTING COMMUTER AIRLINE SERVICE

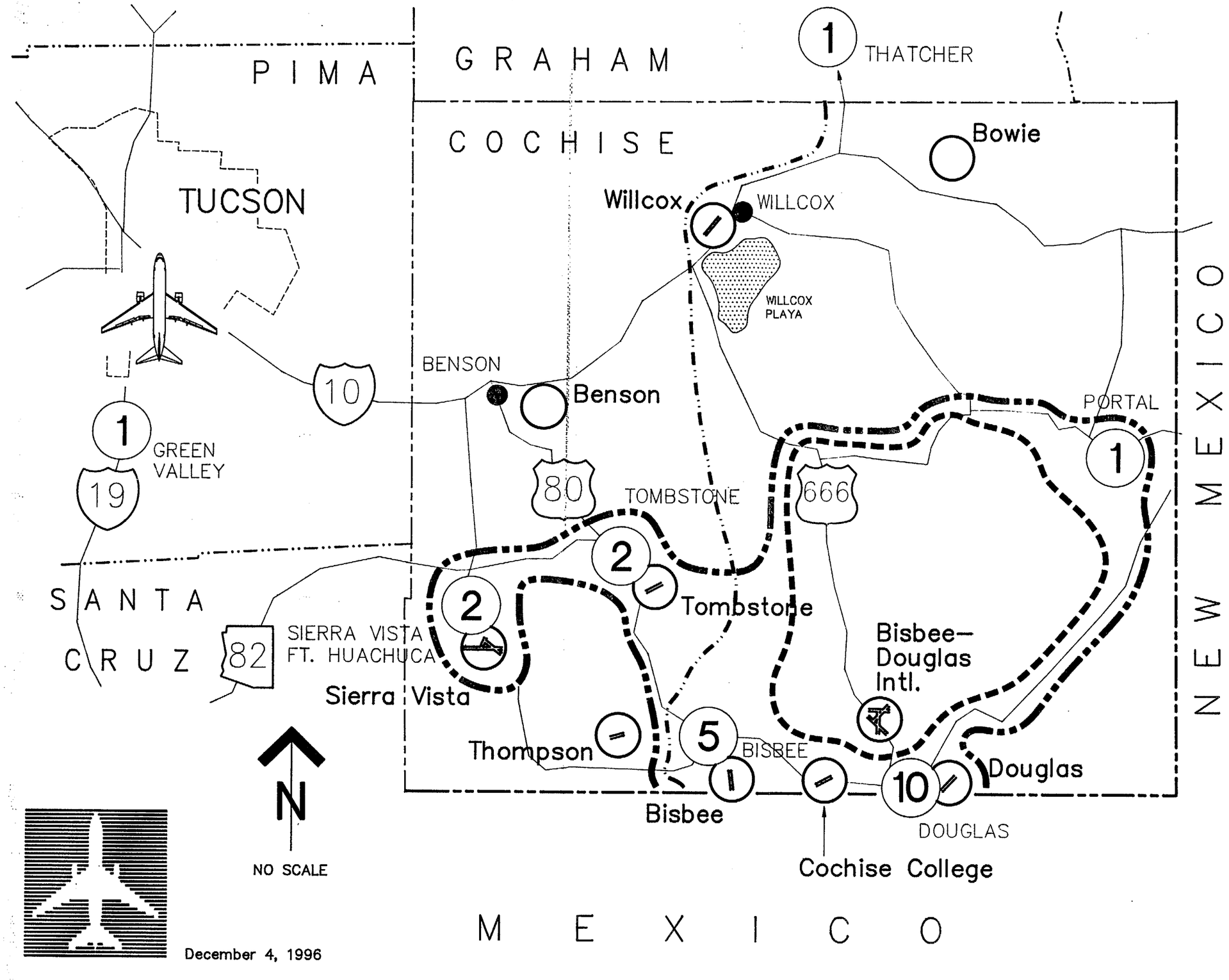
Air Carrier Service Area Map (Arizona)

Figure 2-13

December 4, 1996



BISBEE-DOUGLAS INTERNATIONAL AIRPORT



INDICATES 7,300' RUNWAY SERVICE AREA

INDICATES 5,000' RUNWAY SERVICE AREA

INDICATES BASED AIRCRAFT SERVICE AREA

CITY NAME

1 — INDICATES NUMBER OF BDI BASED AIRCRAFT OWNED BY RESIDENTS

INDICATES EXISTING GENERAL AVIATION AIRPORT

General Aviation Service Areas Map

Figure 2-14

December 4, 1996